
NT8D41BA Quad Serial Data Interface Paddle Board

The NT8D41BA Quad Serial Data Interface (QSDI) Paddle Board provides four RS-232-C serial ports. These ports allow communication between the Meridian 1 system and four external devices, either DTE or DCE. The QSDI paddle board is normally used to connect the Meridian 1 system to the system administration and maintenance terminal. It can also be used to connect the system to a background terminal (used in the hotel/motel environment), a modem, or to the Automatic Call Distribution (ACD) or Call Detail Recording (CDR) features.

The QSDI paddle board mounts to a special socket on the rear of the backplane of the following modules:

- NT5D21 Core/Network Module for system options 51C, 61C, and 81C
- NT6D39 CPU/Network Module for system options 51 and 61
- NT9D11 Core/Network Module for system option 61C

The QSDI paddle board is compatible with all existing system software, but can only be used with the Meridian 1 system options listed above. It does not support the 110 baud rate or the 20 mA current loop interface.

Physical description

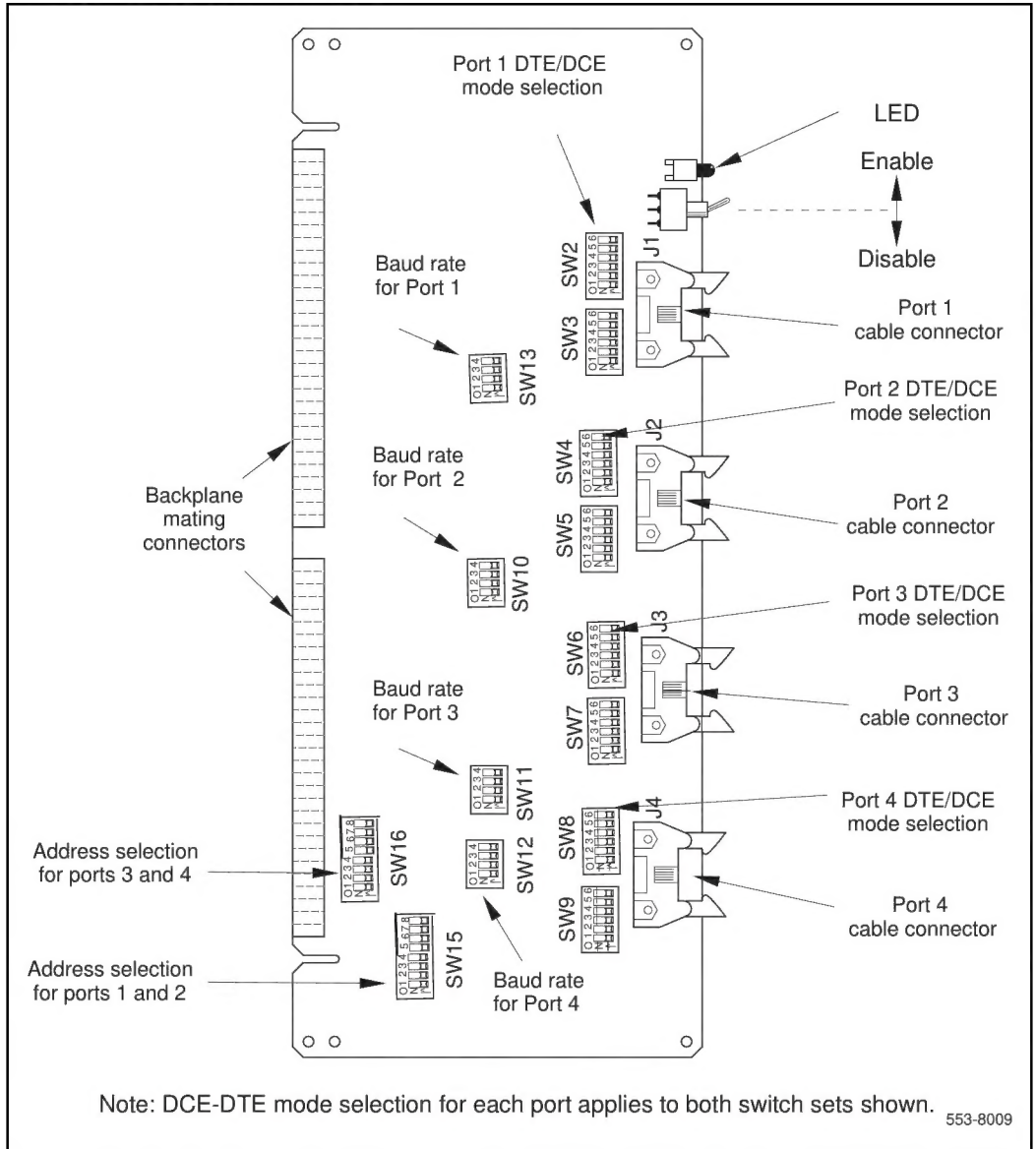
The NT8D41BA Quad Serial Data Interface Paddle Board (see [Figure 5](#)) is a printed circuit board measuring 31.12 by 12.7 cm. (12.25 by 5.0 in.).

The QSDI paddle board can be used in a system backplane for a total of four serial ports (up to 12 other serial ports can be added by plugging standard serial cards into standard system slots). The serial ports on the card are addressed as a pair of consecutive addresses (0 and 1, 2 and 3, and so on to 14 and 15), using switches SW15 and SW16.

The front edge of the card has four serial port connectors, an enable/disable switch (ENB/DIS), and a red light emitting diode (LED). The LED indicates the card status. It is lit when

- the ENB/DIS switch is set to disable
- all four ports are disabled in software
- all four ports are not configured in the configuration record

Figure 5
NT8D41BA QSDI paddle board

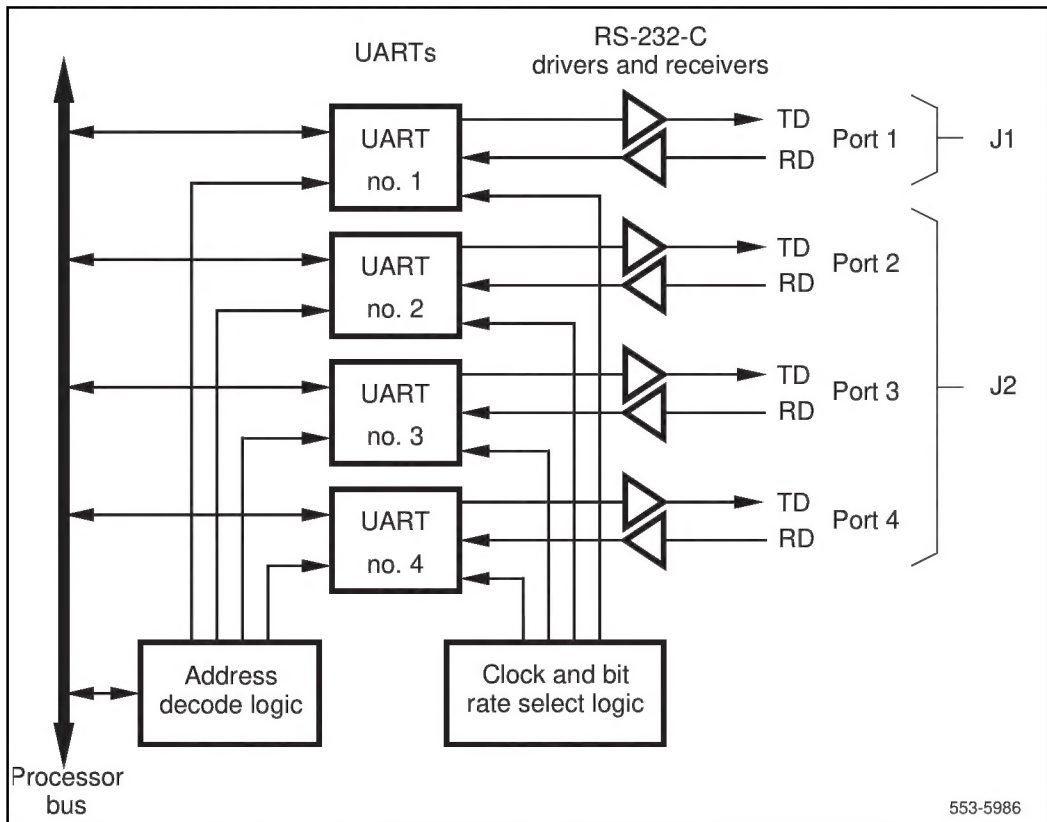


Functional description

The NT8D41BA QSDI Paddle Board has four asynchronous serial ports. These serial ports are connected to the I/O panel in the back of the shelf using special adapter cables. The serial ports can be used to connect the Meridian 1 system to a terminal, a printer, a modem, or to another system processor.

The QSDI paddle board design (see [Figure 6](#)) contains four Universal Asynchronous Receiver/Transmitters (UARTs) and the logic necessary to connect the UARTs to the system processor bus. Other logic on the card includes baud rate generators, RS-232-C driver/receiver pairs, and the switches and logic needed to configure each UART.

Figure 6
NT8D41BA QSDI paddle board block diagram



System considerations

In dual-processor Meridian 1 systems, the QSDI paddle board will behave differently depending on which backplane socket it is installed in. Installing the paddle board into a socket in the network area of the backplane allows it to work when either of the system processors is active. Installing the paddle board into a socket in the CPU area of the backplane allows it to work only when that CPU is active.

The QSDI paddle board is normally installed into a socket in the network area of the backplane. This allows it to be accessed by either of the system processors. This is necessary because the active CPU switches automatically each night at midnight and whenever a fault occurs on the active CPU card.

The QSDI paddle board can also be installed into a socket in the CPU area of the backplane (this is supported in NT6D39AA shelves only). This is done when performing maintenance or an upgrade on the Meridian 1 system. The QSDI paddle board is plugged into the CPU that is not the active system CPU. One of the serial ports on the QSDI paddle board is then connected to a maintenance terminal and the CPU board is put into maintenance mode. Diagnostics can then be run from the maintenance terminal without having to stop the system. This is also used to perform a parallel reload of the system software without affecting the operation of the switch.

The QSDI paddle board cannot be used in Meridian 1 systems options 71 and 81 since there are no sockets on the rear of the backplane in the NT8D34 CPU Module or the NT6D60 Core Module. However, the NT6D66 Call Processor Card has two on-board serial ports. The NT6D66 Call Processor Card is used in the option 51C, 61C, 81, and 81C.

Connector pin assignments

The RS-232-C signals for port 1 through port 4 are brought out on connector J1 through J4 respectively. The pinouts for each port are identical to those for each of the other three ports. [Table 9](#) shows the pin assignment that applies to each connector.

Table 9
Connectors J1, J2, J3, and J4 pin assignments

Pin #	Signal	Purpose in DTE mode	Purpose in DCE mode
1	DCD	Data Carrier detect (Note 1)	Data Carrier detect (Not used)
2	RD	Transmitted data	Received data
3	TD	Received data	Transmitted data
4	DTR	Data terminal ready	Data terminal ready (Note 2)
5	GND	Signal Ground	Signal Ground
6	DSR	Data set ready (Note 1)	Data set ready
7	RTS	Request to send (Not Used)	Request to send (Note 2)
8	CTS	Clear to send (Note 1)	Clear to send
Note 1: In DTE mode the signals CD, DSR, and CTS are tied to +12 volts to signify that the port on the QSDI Paddle Board is always ready to transmit and receive data. This mode is set to connect to a terminal device (DTE). Note 2: In DCE mode the signals DTR and RTS are tied to +12 volts to signify that the port on the QSDI Paddle Board is always ready to transmit and receive data. This mode is set to connect to a modem device (DCE).			

Configuring the QSDI paddle board

Configuring the QSDI paddle board to work in a Meridian 1 system consists of setting these option switches for each serial port:

- Baud rate
- Port address
- DTE/DCE mode

The QSDI paddle board has fourteen option switches, SW2–13, SW15–16. [Figure 5](#) on [page 25](#) identifies the location of option switches on the QSDI paddle board. Learn how to set these switches in the following sections.

Once the board has been installed, the system software must be configured to recognize it. Instructions for doing this are found in the section titled [“Software service changes” on page 31](#).

Option switch settings

Baud rate

Switches SW13, SW10, SW11, and SW12 determine the baud rate for ports 1, 2, 3, and 4, respectively. See the settings for these switches in [Table 10](#).

Table 10
QSDI paddle board baud rate switch settings

Baud rate	Baud Clock (kHz)	SW13 (port 1), SW10 (port 2), SW11 (port 3), SW12 (port 4)			
		1	2	3	4
150	2.40	on	off	on	on
300	4.80	on	on	off	on
600	9.60	on	off	off	on
1,200	19.20	on	on	on	off
2,400	38.40	on	off	on	off
4,800	76.80	on	on	off	off
9,600	153.60	on	off	off	off
19,200*	307.20	on	on	on	on

* For future use.

Address

Switch SW15 or SW16 and logic on the card always address the four UARTs using a pair of addresses: 0 and 1, 2 and 3 through 14 and 15. The settings for both switches are shown in [Table 11](#). To avoid system problems, switches SW15 and SW16 must not be configured identically. [Figure 5](#) on [page 25](#) displays SW15 and SW16.

Table 11
QSDI paddle board address switch settings

SW15	Port 1	Port 2	Switch settings							
SW16	Port 3	Port 4	1*	2*	3	4	5	6	7	8
Device pair addresses	0	1	E	X	off	off	off	off	off	off
	2	3	E	X	off	off	off	off	off	on
	4	5	E	X	off	off	off	off	on	off
	6	7	E	X	off	off	off	off	on	on
	8	9	E	X	off	off	off	on	off	off
	10	11	E	X	off	off	off	on	off	on
	12	13	E	X	off	off	off	on	on	off
	14	15	E	X	off	off	off	on	on	on

* To enable ports 1 and 2, set SW15 position 1 to ON. To enable ports 3 and 4, set SW16 position 1 to ON.

+ For each X, the setting for this switch makes no difference, because it is not used.

DTE/DCE mode

Each serial port can be configured to connect to a terminal (DTE equipment) or a modem (DCE equipment). Instructions for setting the DTE/DCE switches SW2, SW3, SW4, SW5, SW6, SW7, SW8, and SW9 are shown in [Table 12](#). [Figure 5](#) shows the location of these switches on the paddleboard.

Example: Port 1 is changed from DTE to DCE by reversing every switch position on SW3 and SW2; i.e., switches that were off for DTE are turned on for DCE, and switches that were on for DTE are turned off for DCE.

Table 12
QSDI paddle board DTE/DCE mode switch settings

Mode	Port 1 — SW 3						Port 1 —SW 2					
	1	2	3	4	5	6	1	2	3	4	5	6
DTE (terminal)	on	on	on	off	on	off	off	on	off	on	off	on
DCE (modem)	off	off	off	on	off	on	on	off	on	off	on	off
	Port 2 — SW 5						Port 2 — SW4					
	1	2	3	4	5	6	1	2	3	4	5	6
DTE (terminal)	on	on	on	off	on	off	off	on	off	on	off	on
DCE (modem)	off	off	off	on	off	on	on	off	on	off	on	off
	Port 3 — SW 7						Port 3— SW 6					
	1	2	3	4	5	6	1	2	3	4	5	6
DTE (terminal)	on	on	on	off	on	off	off	on	off	on	off	on
DCE (modem)	off	off	off	on	off	on	on	off	on	off	on	off
	Port 4 — SW 9						Port 4 — SW 8					
	1	2	3	4	5	6	1	2	3	4	5	6
DTE (terminal)	on	on	on	off	on	off	off	on	off	on	off	on
DCE (modem)	off	off	off	on	off	on	on	off	on	off	on	off

Software service changes

Once the NT8D841BA QSDI Paddle Board has been installed in the system, the system software needs to be configured to recognize it, using the Configuration Record program (LD 17). Instructions for running this program are found in the *X11 input/output guide*.

Some of the prompts that are commonly used when running the Configuration Record program (LD 17) are shown in [Table 13](#). These parameters must be set for each port if both ports are being used.

Table 13
QSDI serial port configuration parameters

Prompt	Response	Description
REQ	CHG	Change configuration.
TYPE	ADAN	Configuration type.
ADAN	NEW TTY x New PRT x	Define a new system terminal (printer) port as device x, where x = 0 to 15.
CTYPE	SDI4	Quad port card
DES	XQSDI	Quad density QSDI paddle board.
USER	xxx	Enter the user of port x. The values that can be entered depend on the software being used. See the <i>X11 input/output guide</i> for details.
XSM	Yes, (No)	Port is used for the system monitor.

Applications

The NT8D41BA Quad Serial Data Interface paddle board is used to connect the Meridian 1 switch to a variety of communications devices, printers, and peripherals. Any RS-232-C compatible device can be connected to either of the card's two serial ports.

The standard application for the paddle board is to connect the Meridian 1 switch to the system console. This can be either a direct connection if the console is located near the switch, or through a modem for remote maintenance.

Bell 103/212 compatible dumb modems are recommended to connect a remote data terminal. If a smart modem (such as a Hayes modem) is used, configure the modem for the dumb mode of operation (Command Recognition OFF, Command Echo OFF) before connecting the modem to the asynchronous port.

The serial data interface connectors on the paddle board are not RS-232-C standard DB-25 connectors. The NT8D84AA interface cable is used to adapt the paddle board to a non-standard pinout DB-9 connector (normally located on the I/O panel). The NT8D93 cable is then used to connect the non-standard DB-9 connector to a peripheral that uses a RS-232-C standard DB-25 connector (See [Figure 7.](#))

Figure 7
NT8D41BA QSDI paddle board cabling

